

THE DELIMITATION OF THE GENUS *MAGNOLIA* (MAGNOLIACEAE)

by

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SUMMARY

Aromadendron Blume, *Manglietia* Blume and *Talauma* Juss. are reunited with *Magnolia* Linn. as advocated by H. Baillon. Species of the first three genera from the Malay Peninsula and Thailand are renamed.

In preparing taxonomic accounts of the family Magnoliaceae for Tree Flora of Malaya (Keng 1973) and for the Flora of Thailand (Keng 1975), I followed closely the generic delimitation laid down by the late Mr. J.E. Dandy (1927, 1964) who kindly made available to me his unpublished lists of magnoliaceous plants from Malaya and Thailand and also critically read and commented on my manuscripts. On both occasions, I treated *Magnolia* Linn., *Manglietia* Blume, *Talauma* Juss. and *Aromadendron* Blume as separate genera. In Mr. Dandy's opinion, these four genera are well-defined ones. This can be better expressed in the following key (adapted from Dandy 1964, p. 54):

- A. Fruiting carpels dehiscent, not fleshy,
 - B. Carpels free, in fruit dehiscent along the dorsal suture,
 - C. Ovules 4 or more in each carpel 1. *Manglietia*
 - C. Ovules 2 in each carpel (rarely 3-4 in the lower carpels) 2. *Magnolia*
 - B. Carpels concrescent at least at the base, in fruit circumscissile and woody, the upper portions falling away either singly or in irregular masses, the lower portions persistent with the suspended seeds; stipules adnate to the petiole 3. *Talauma*
- A. Fruiting carpels indehiscent, concrescent to form a fleshy syncarp; tepals 18 or more, subequal; connective-appendage very long, subequaling or longer than the anther-loculi; ovules 2 in each carpel; stipules free from the petiole 4. *Aromadendron*

Previously I had my doubts about the validity of segregation of *Manglietia* and *Talauma* from *Magnolia*, and had discussed the matter with Mr. Dandy in August 1970 while visiting him at Tring, England during the time when he was recuperating from an operation. Very recently after examining several fully matured fruiting material of *Aromadendron*, I tended to agree with Baillon (1866, 1871) who considered *Magnolia* a much broader genus which includes *Manglietia*, *Talauma* and *Aromadendron*. The reasons are presented below.

Among the three, the weakest genus is *Manglietia* which differs from *Magnolia* merely in the number of ovules per carpel, and even that is not a clear-cut one (see Dandy's key above). When I raised this point during my visit, Mr. Dandy

smilingly replied that someone in the USSR (presumably he meant Dr. M.A. Baranova) studied the stomatal structures and supported the segregation.

Technically the difference between *Magnolia* and *Talauma* lies in their fruit character alone (see the key above). Without fruit, it is not possible to distinguish them. A case in point: In my treatment of a Thai species, *Magnolia craibiana* Dandy for the Flora of Thailand, the following note was added with the full endorsement of Mr. Dandy: "No fruiting specimens of this species has been seen, and its generic position is therefore in doubt. It may possibly belong to the genus *Talauma*, but until this can be proved by collection of the fruit there is no point in transferring it to that genus". (Keng 1975, p. 255).

Elsewhere I questioned the wisdom of separating genera merely based on fruit character. In my proposal of combining *Tutcheria* with *Pyrenaria* (Theaceae), I cited several similar examples such as: *Lobelia-Pratia* (Campanulaceae), *Buddleja-Nicodemia* (Loganiaceae), *Euphorbia-Elaeophoria* (Euphorbiaceae), and *Aloe-Lomatophyllum* (Liliaceae) which are segregated on their different nature of fruits (for details, see Keng 1972). It appears that *Magnolia-Talauma* complex falls into the same category.

Aromadendron and *Talauma* are so closely related that the former was reduced to the latter by several botanists such as Benthams (in Benthams and Hooker f.), Prantl (in Engler & Prantl), Miquel and others (for details see Dandy 1927). Their segregation was, however, upheld by Dandy on the grounds that *Aromadendron* differs from *Talauma* in: "(1) the indehiscent, fleshy fruiting carpels, (2) the free stipules, (3) the elongated peduncle, (4) the numerous tepals, and (5) the long connective-appendages" (Dandy 1927), p. 258). Among the characters mentioned, the stipules are either adnate to or free from the petiole in the genus *Magnolia* as defined by Dandy, the length of peduncles and connective-appendages are of quantitative value, the number of tepals is not consistent in any one of these taxa; thus the only crucial one is the fruit character as reflected in Dandy's key to the genera quoted in the beginning of this paper.

In examining the freshly collected, ripened fruit of *Aromadendron* (*A. elegans* Bl.) from Bukit Timah, Singapore, to my great surprise, the fruiting carpels are not fleshy. In fact they are dry, and dehiscing from within and breaking up into large or small, irregular pieces (plate 1). In the fully ripened specimens, only a number (35–50) of pink, succulent seeds remains, each attached to the persistent central axis by a thin but strongly elastic funicular cord. This is virtually indistinguishable from the fully matured fruits of *Talauma* which I had observed before.

Sometime ago, in response to my enquiry, Dr. J.E. Canright of Arizona State University, the foremost student of the Magnoliaceae, replied in a letter dated March 29, 1972: "I seriously doubt that you can separate *Magnolia*, *Manglietia*, *Talauma* (and perhaps others) on anatomical grounds, this includes woody anatomy, floral anatomy, nodal anatomy, seedling anatomy, leaf anatomy, and even pollen morphology" (personal communication).

It can thus be concluded that *Manglietia*, *Talauma* and *Aromadendron* (but not *Michelia*) should be merged with *Magnolia*, a view originally expressed by Baillon (1866, 1871) over a century ago. It saddens me a great deal that I could not discuss this point further with Mr. Dandy who passed away in 1976.

A list of newly combined names of *Magnolia* originally described under *Aromadendron*, *Manglietia* and *Talauma* from Malaya and Thailand is presented below:

Magnolia betongensis (Craib) H. Keng, comb. nov.

Talauma betonensis Craib) Kew Bull. 1925: 7; H. Keng in Whitmore, Tr. Fl. Mal. 2: 291, f. 5, 1973, and in Smitinand & Larsen, Fl. Thai. 2(3): 258, f. 41, 1975.

Magnolia decandollii H. Keng, nom. nov.

Talauma candollii Bl., Verh. Batav. Genootsch. 9: 147, 1823; H. Keng in Whitmore, l.c. 293, and in Smitinand & Larsen, l.c. 256 (non *Magnolia candolli* Link).

Magnolia elegans (Bl.) H. Keng, comb. nov.

Aromadendron elegans Bl. Bijdr. 8, 1825; H. Keng in Whitmore, l.c. 283, and Smitinand & Larsen, l.c. 252, f. 38.

Magnolia hodgsonii (Hook. f. & Thomas.) H. Keng, comb. nov.

Talauma hodgsonii Hook. f. & Thomas., Fl. Ind. 1: 74, 1855; H. Keng in Smitinand & Larsen, l.c. 258.

Magnolia nutans (Dandy) H. Keng, comb. nov.

Aromadendron nutans Dandy, Kew Bull. 1928: 183; H. Keng in Whitmore, l.c. 284.

Magnolia siamensis (Dandy) H. Keng, comb. nov.

Talauma siamensis Dandy, Kew Bull. 1929: 105; H. Keng in Whitmore, l.c. 293, and in Smitinand & Larsen, l.c. 257, f. 40.

Magnolia singaporensis (Ridl.) H. Keng, comb. nov.

Talauma singaporensis Ridl. Kew Bull. 1914: 323; H. Keng in Whitmore, l.c. 293.

Magnolia villosa (Miq.) H. Keng, comb. nov.

Talauma villosa Miq. Fl. Ind. Vat. suppl. 1: 366, 1860; H. Keng in Whitmore, l.c. 293.

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PLATE 1.

A branch of *Aromadendron elegans* Blume (or *Magnolia elegans* H. Keng) with two fruit specimens, the one, a nearly matured, seemingly fleshy and succulent syncarp (in lower corner, detached); and the other, a fully matured syncarp with carpels dehiscent from inside and falling away in pieces and with seeds remaining on the central axis (in centre, attached). Collected from Bukit Timah Nature Reserve, Singapore on July 19th, 1978 by H. Keng and J.F. Maxwell; photographed by Mr. D. Teow. (Scale in 1 cm divisions).